

district 89 as configured in my illustrative maps is an “opportunity to elect” district.<sup>66</sup>

11F. The NAACP December 14 Response Brief also objects to what they describe as the limited changes made in the Richmond modules in district 71. I agree that only about 15% of the population in district 71 in the 2011 Enacted Map was changed, but these are changes that are part of line drawing that creates two districts wholly within Richmond, and that thus helps effectuate a districting that follows traditional districting principles. In contrast, in finding a way to redraw 71 to reduce its minority population below 50%, the NAACP map has split Richmond into five pieces, rather than four, as in my modules, or the three that would be possible were one or more incumbents with homes in Richmond to be paired with other incumbents. Given the total population of the County, even taking incumbency issues into account, I did not consider any maps which cut Richmond into more than 4 pieces to be appropriate in a narrowly tailored court-ordered plan drawn according to traditional districting principles. Thus, the way in which the NAACP redrew district 71 is not one that I would recommend to the Court.

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<sup>66</sup> I would also note that the differences in black voting age population between the NAACP version of 89 and district 89 as it is configured in my illustrative maps are not that large (52.12% in the NAACP plan, 54.98% in the 21-district illustrative module, and 54.92% in the 26-district illustrative module), with all three districts above 50% black voting age population.

11G. The NAACP also object to districts 68 being left untouched in all my Richmond area illustrative modules and to district 73 being left untouched in one of my modules. My reasoning for leaving district 68 untouched is spelled out in my December 7 Report and reiterated below in response to a related issue about district 68 raised by Defendant-Intervenors. In my view the issues raised are ultimately legal ones. For district 68 I refer the reader to that discussion. As for district 73, I do not see a viable argument that this district should have been changed as part of my remedial map drawing. It was a district entirely within Henrico, and it remains so; it was an overwhelmingly white district, and it remains so. Given that the unconstitutionality of the Richmond area districts could be remedied without changing its configuration, I saw no reason to change its configuration.

12. In Defendant-Intervenors December 14 Response Brief, I have identified nine claims about defects in the illustrative modules I have provided to the Court and/or the process for remedial line drawing that is specified in my Report, that were substantive enough to suggest the need for comment on my part.<sup>67</sup> First and

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<sup>67</sup> Defendant-Intervenors also asserted in Section I of their December 14 Response Brief that they lacked sufficient time to review my illustrative modules (see pp. 2-7) and had difficulty converting them to maps (see pp. 4,5). Whatever the merits of this claim in the light of the fact that other parties were able to review the modules pursuant to the Court December 14 deadline, the Court extended the time for Response filing to January 4, so this point is now moot. As to alleged inconsistency across my illustrative map modules (see p. 4), I do not understand the nature of the problem. The Petersburg illustrative modules were drawn to be compatible with any of the Richmond illustrative modules. And the Norfolk illustrative modules were drawn to be compatible with any of the Peninsula illustrative modules. The apparent problem with inconsistency in black voting age population numbers

foremost, they assert that the Special Master has engaged in districting that uses race as a preponderant motive, and confused a claim of racial preponderance with one of racial vote dilution due to illegal packing of minority voting strength. Second, they assert that the Special Master has placed a legally inappropriate weight on avoiding unnecessary splits of counties and other pre-existing political subunits. Third, they argue that, the population shifts from the districts in the 2011 Enacted Map to those in my illustrative maps have been excessive. Fourth they assert that some of the unconstitutional districts, namely districts 69, 71 and 74, have not been changed enough to fully remedy the unconstitutionality. Fifth, they argue that my illustrative modules are not adequately compact. Sixth, they argue that there an

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asserted on p. 5 of Defendant-Intervenor's December 14 Response Brief probably reflects some minor technical corrections to the Norfolk area modules made after the December 7 filing deadline and the drafting of my December 7 Report. Corrected shapefiles were filed on the next business day, on Monday, December 10. The fact that such corrections were made in the Norfolk area is noted in the previous Addendum to my Report. I do apologize for the fact that these errors (caused by some conversion issues between *Maptitude* and *ArcGIS*, and by the fact that there was an unassigned zero population census block) were not detected before the filing of my Report, but the difference are trivial and of no substantive importance, and were corrected once the legislative staff received block assignment files from my research assistant. (See, however, the issue of labeling of Norfolk 1A and 1C discussed in footnote 1 of this Appendix). The claim (p. 6) that data was missing that was needed to evaluate modules is erroneous. Census data from 2010 could be combined with the module shape files to generate the same types of reports I presented in the Special Master Report. Moreover, all relevant data for each of the changed districts in each of the ten modules was reported in the Special Master report, starting on page 69.

excessive number of VTD splits in the illustrative modules prepared the Special Master. Seventh, they argue that I have invented a new and inappropriate districting criterion, avoidance of “fracking,” that I should not have applied to evaluate potential court-ordered maps. Eighth, they assert that I placed essentially no weight on incumbency. Ninth, they argue (p.23) that the effect of my plans was biased by targeting “the very incumbents the legislature would be most inclined to protect,” harming the re-election chances of senior legislative leaders residing in districts adjacent to those found unconstitutional.

I reject all of these claims as factually unfounded.

12A. The assertion that race was the preponderant motive in my line drawing (p.7 of the December 14 Response of Defendant-Intervenors) is flatly wrong, for the reasons carefully documented in my Report. As stated clearly in my Report, and as explicitly acknowledged in Response Briefs such as that of the NAACP, some use of racial data is unavoidable since it is necessary to determine that the districts redrawn according to traditional districting principles did not inadvertently result in violation of Section 2 of the Voting Rights Act in the way they were reconfigured.

i. Furthermore, it is simply wrong to claim that I did not distinguish between unconstitutionality due to a racial preponderant motive and the Section 2 standard for vote dilution. I am well aware of the differences, having been involved previously

in cases of each type. The remedy I sought was for the unconstitutional use of race as a preponderant motive. However, in examining potential remedies, any court-ordered remedial plan must be sensitive to the potential for causing inadvertent vote dilution. This sensitivity required my best judgment as a political science expert that these redrawn districts neither crack nor pack minority voting strength in a manner that is dilutive of minority voting strength.

I have described in detail in my Report my reasons for believing that all of the redrawn unconstitutional districts in all of my modules are ones that continue to provide minorities a realistic equal opportunity to elect candidates of choice, and that this determination includes even those districts in which the black voting age population percentage was most reduced from what it had been in the 2011 Enacted map. Assertions to the contrary by Defendant-Intervenors are unsupported by evidence drawn from empirical election analysis.

ii. As noted in my December 7 Report, in reaching my determinations about opportunity to elect, I used exactly the same criteria that I had used when serving as a Special Master in *Personhuballah* but now applied them to election data compiled in the proposed remedial legislative districts. Contrary to what is suggested by Defendant-Intervenors on p. 20 of their December 14 Response, in my view as a political science expert, the eleven unconstitutional districts remain “opportunity to elect” districts, and not merely influence districts. Since my

reasoning is laid out in full in my December 7 Report, there is no need to repeat it here. As noted earlier, Plaintiffs also characterize my redrawn unconstitutional districts as “opportunity to elect” districts; and so does the NAACP, though the NAACP also argues strongly that district 89 in Norfolk and district 71 in Richmond should each have been reconfigured so that their black voting age population was reduced.<sup>68</sup>

iii. Defendant-Intervenors also appear to assert that my intent was to maximize minority voting influence in districts adjacent to the unconstitutional districts. This, too, is inaccurate. My concern was for the redrawing of the unconstitutional districts in a narrowly tailored fashion to remedy their unconstitutional infirmities. Subject to the need to make use of traditional districting criteria, and my later concern to avoid pairing of incumbents if this could be done within the constraints of traditional districting criteria, what happened in the districts adjacent to the unconstitutional districts was simply the consequences of drawing a constitutional

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<sup>68</sup> On p. 21 of Defendant-Intervenor’s December 14 Response Brief they assert that Plaintiffs’ Counsel rejected the need to redraw any districts below 50% black voting age population in a remedy plan. I would, however, note that whatever Plaintiffs’ Counsel once asserted about not drawing maps with a black voting age population below 50%, in fact, there are three districts with a black voting age population below 50% in Plaintiffs’ plan A, and four districts with a black voting age population below 50% in Plaintiffs’ plan B. The NAACP map also had districts with a less than 50% black voting age population.

map.<sup>69</sup> Moreover, to keep the plan narrowly tailored to the remedy of the unconstitutional infirmities in eleven districts, I sought to limit the number of adjacent districts that were redrawn to the minimum necessary to achieve this purpose.

iv. As noted in my Report, while the constitutional infirmity in the 2011 Enacted map is that it used race as a preponderant motive, the consequences of using race as a preponderant motive were that the unconstitutional districts had levels of minority population higher than what was needed to assure minorities of an equal opportunity to elect candidates of choice, and in a fashion that did not recognize geographic differences in racial demography and in patterns of electoral polarization along racial lines. In contrast, as is apparent from examination of the black voting age population in the redrawn unconstitutional districts in my illustrative modules, the African-American voting age share in the redrawn unconstitutional districts varies considerably across different parts of the state, from 40.2% (district 70 in the 26-district configuration) to 54.98% (district 89 in the 21-district configuration) rather than being consistently near to or above 55%.

The reason that the levels of black voting age population in the districts in my module vary so considerably is that, unlike the 2011 Enacted map, they naturally

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<sup>69</sup> In this context, I would also reference my discussion of district 62 in the section above where I review the December 14, 2018 Response of the NAACP to my illustrative modules.

reflect differences across geographic regions in the level of concentration of minority voting strength. By using traditional districting criteria to draw lines, redrawing seven or eight of the unconstitutional districts to be whole county districts, and not collecting small pockets of black population in neighboring counties to add to a district to achieve an arbitrary 55% level of black voting age population, virtually as a mathematical necessity, the level of minority population in the eleven unconstitutional districts would fall in any neutrally drawn map. But how far it will fall will vary dramatically across different regions of the state, depending upon the racial demography in the area.

v. In Defendant-Intervenors December 14 Response Brief (at p.7) they assert that: “The Special Master concedes that he used a 55% BVAP figure as a fixed, predetermined and non-negotiable number to structure the districts he drew. To be sure, he used it as a ceiling, not a floor, but what matters is that he used the number in structuring his remedial districts.” This statement completely mischaracterizes my references to a 55% black voting age population in my Report of December 7.

I did indeed object to districts found above a 55% black voting age percentage in the various remedial plans. But the reason I did so is because my exploration of alternative configurations throughout the relevant areas of the state persuaded me that such high levels of black voting age population did not normally result from the

racial geography of the state when remedial plans were drawn according to neutral criteria without concern for race. Nor was such a high level of African-American voting age population needed to avoid racial vote dilution.

Moreover, in the configurations I drew, once I imposed traditional districting criteria, black voting age proportions in redrawn unconstitutional districts naturally fell below 55% -- in some cases dramatically below, in a few other cases much closer to 55%. I can illustrate this simple point with two configurations based on my illustrative modules, a 21-district configuration and a 26-district configuration. For comparative convenience, I again use the configurations reported by the Princeton Gerrymandering Project.

It is visually apparent from inspection of the black voting age population values in the unconstitutional districts shown in the table below in the 21-district and 26-district illustrative maps that these black voting age population values are far away from what would be found if, as Defendant-Intervenors allege, I had sought to come as close as possible to a 55% value, while still consistently remaining below it, i.e., used a 55% value as a ceiling. Rather this wide range of black voting age population values reflects difference in underlying racial demography such that, in some areas of the state the black voting age populations in the illustrative remedial districts I drew are close to those of the 2011 Enacted map, while in other remedial districts

they are quite distinct from those found in the 2011 Enacted map.<sup>70</sup> However, in all areas of the state the line drawing process I used was completely removed from the race preponderant process that led to eleven districts in the 2011 Enacted map being found unconstitutional.

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<sup>70</sup> DI7002 is the plan currently advocated by Defendant-Intervenors as the one which the Court should choose in preference to any of my modules and to any other proposed configurations. However, the infirmities with DI7002 noted in my Report included having two districts with a 60%+ black voting age population without offering any evidence that such a configuration was compelled by geographic or demographic factors or was needed to avoid vote dilution. Moreover, DI7002 actually increased black voting age populations in some of the unconstitutional districts, again with no evidence that such increases were compelled by geographic or demographic factors or were needed to avoid vote dilution. For these and other reasons detailed in my Report, given what is shown in the alternative maps available to this Court, DI7002 can have no claim to be a narrowly tailored remedy.

Comparison of Black Voting Age Percentages in the Eleven Unconstitutional Districts

District	Enacted	SM21	SM26
63	59.53%	51.81%	47.47%
69	55.19%	54.38%	54.38%
70	56.37%	52.29%	52.29%
71	55.35%	54.01%	54.01%
74	57.24%	54.37%	54.37%
77	58.78%	47.03%	40.23%
80	56.30%	51.38%	51.38%
89	55.46%	54.98%	54.92%
90	56.59%	48.91%	41.93%
92	60.72%	53.87%	53.87%

vi. The inclusion of water territory in district 91 discussed in Defendant-Intervenor's December 7, 2018 Response Brief was not, as Defendant-Intervenors claim, racially driven. Instead it was simply part of a remedy to unconstitutionality in districts 92 and 95 that came about by using neutral districting criteria for the whole peninsula, with an emphasis on drawing districts within a single county where possible. In the text of my Report I discuss the meaning of contiguity and point out that the U.S. census often assigns portions of rivers and other water bodies to separate census blocks. District 91 is a contiguous district according to census geography.

vii. There are two main assertions in Defendant-Intervenors December 7 Response Brief about VTD splits in my modules. The first is some of these VTD splits reflect an impermissible racial purpose. The second is the claim that the number of VTD splits are excessive. Neither of these assertions is accurate.<sup>71</sup> In fact, the number of VTD splits in my illustrative modules is considerably fewer than in the 2011 Enacted Map and not very different from the number of VTD splits found in DI7002. Indeed, as I show later in this Addendum, there are actually fewer VTD splits in the 26-district illustrative map that can be created from my illustrative

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<sup>71</sup> For example, on p.11 of their December 14 Response Brief, Defendant-Intervenors identify three VTD splits that between Districts 91 and 92 that they claim are evidence of race conscious districting. Here I would simply note that these particular splits were for compactness improvement purposes, and not at all for race conscious districting. (As with other VTD splits, if a module including these VTD splits is part of a plan adopted by the Court, they can be addressed as final technical cleanup is performed on that plan by legislative staff under my direction.)

modules than in DI7002, the map recommended by Defendant-Intervenors for adoption by the Court.

In this subsection, however, I focus on the VTD splits between district 68 and district 69 singled out by Defendant Intervenors' December 14 Response Brief on p. 22. because these have a different cause than population balancing or compactness concerns. These VTD splits are due to my decision that it was not necessary to redraw district 68 in the process of remedying the unconstitutional infirmities in the eleven districts found unconstitutional.

District 68 was not found by the Court to be an unconstitutional district, and I have preferred to leave undisturbed the configurations of districts adjacent to the unconstitutional districts where possible when I found no need to do so to redraw the unconstitutional districts in a constitutional fashion. Leaving district 68 untouched also has another reason in its favor. As I noted in my Report, there are four current incumbents with homes located in Richmond. If I maintain district 68 in its present form (or very close to it), I need not pair any of the incumbents in the Richmond area with another incumbent.

It would be quite simple to eliminate the VTD splits between district 68 and district 69 and redraw the border using whole VTDs. But it would be easier still to redraw these few VTDS. Moreover, if we do not opt simply for administrative change in the

configuration of these few VTDs, and instead opt for redrawing the border between district 68 and 69 using whole VTDs, this choice increases by one the number of legislative districts that would be changed in all my illustrative remedial maps. Nonetheless, if the Court instructs me to eliminate the VTD splits between district 68 and district 69, and thus slightly change district 68 from its configuration in the 2011 Enacted map, of course I will do so.

12B. The claim that the Special Master has placed a legally inappropriate weight on avoiding unnecessary splits of counties and other pre-existing political subunits is a legal issue to be left to the Court. In Virginia, as in virtually all states, counties (or their equivalent) are vitally important units of local government. As indicated clearly in my December 7, 2018 Report, avoiding county splits is both a central component of any map drawn in accordance with traditional districting criteria and one that has been very important in court-ordered maps (including that in *Personhuballah v. Alcorn*), and it is a criterion that the legislature itself has identified as relevant to its concerns to avoid splitting communities of interest.<sup>72</sup>

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<sup>72</sup> I would also note that the two assertions by Defendant-Intervenors identified immediately above are very close to logically contradictory. If, as seems to be alleged, I took preserving county boundaries (and those of other pre-existing political subunits) as a dominant criterion in redrawing the unconstitutional districts (after equal population) than, *ipso facto*, race was not a preponderant motive in my line drawing. And, of course, as I have stated repeatedly in my Report, race was not a preponderant factor in my illustrative line drawing. In that Report I clearly laid out the process by which my illustrative modules were created, a process in which race clearly was subordinated to traditional redistricting concerns. In this context I would note that, in contrast to the 2011 Enacted map, where only two of the eleven districts found unconstitutional were within a single county, either 7 and

Moreover, it is the only community of interest criterion for which I had an objective indicator. In their Response the Defendant-Intervenors do not identify other community of interest factors that should take precedence over avoiding jurisdictional splits, and none could outweigh the need to provide a narrowly tailored constitutional remedy.<sup>73</sup>

12C. The assertion that some of the unconstitutional districts, namely districts Richmond area districts of 69, 71, and 74, have not been changed enough to fully remedy the unconstitutionality (see Defendant-Intervenor December 14 Response Brief at pp 19-23) is wrong. This set of Richmond area districts has been redrawn using traditional districting criteria. A key feature of the Richmond area districts in my illustrative modules is that now two districts are drawn wholly within Richmond, rather than one. Even when lines were drawn in a constitutional fashion, the racial demography in Richmond and surrounding counties was such that these three districts would remain ones where minorities had an equal opportunity to elect candidates of choice. I have previously addressed district 71 in my review of the December 2018 NAACP Response Brief and refer the reader to

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8 of the eleven redrawn unconstitutional districts in my illustrative modules are drawn as whole county districts.

<sup>73</sup> In footnote 5, page 24 of their December 14 Response Brief, the Defendant-Intervenors note that legislators from a county have input on judicial nominations from that county, a fact also referenced in my December 7 Report. If this fact is intended to support a legal claim that creating districts that span multiple counties is a legitimate state interest, the weight to be given that claim in the context of this case, is a matter to be left to the Court.

that discussion. My response to a complaint about failure to drastically change the boundaries of districts 69 and 74 would be virtually identical to that given above for district 71. The question for me has been to determine what levels of black population occur “naturally” when we draw plans in a way that prioritizes traditional districting criteria. I do not make use of any mechanical numerical test. I expect that, when we prioritize traditional districting criteria, differences in geographic racial concentration will create different levels of black population across districts, with high levels in some of the districts drawn in areas of the state such as Norfolk, Richmond, and eastern Henrico. As I made quite clear in my December 7 Report, only after I have drawn districts do I check to make sure that I have avoided inadvertent minority vote dilution.

12D. Defendant-Intervenors call attention to the total population shifted across districts in the illustrative modules versus that in DI7002. In my view, as stated clearly in my Report, the need to redraw a constitutional map takes precedence over the maintenance of existing district lines, when district lines needed to be changed to assure a constitutional plan. And sometimes, the need to draw a narrowly tailored map according to good government criteria can lead to substantial change in unconstitutional districts that then spills over into extensive changes in other adjacent districts. Moreover, since, for the reasons stated in my Report, I do not regard DI7002 as a plan which satisfactorily addresses the constitutional violations

in the eleven unconstitutional districts, the fact that it may have moved fewer people than my illustrative maps is in my view, irrelevant.

But I should also note that my illustrative modules are, in fact, very responsive to a concern to limit changes to what is constitutionally required, since they change only 21 to 26 districts rather than the 30 districts of DI 7002 and the NAACP map or the 32 of DI 7003 and Plaintiffs A, or the 33 districts changed in Plaintiffs Map B.

Moreover, the differences in population shifts between my illustrative maps and DI 7002 are not large. For comparison purposes regarding population changes, I will discuss the same two maps based on my illustrative modules that are discussed in the December 14 Response of the Princeton Gerrymandering Project, a 21-district configuration and a 26-district configuration. The proportion of state population changed across districts from the configurations found in the 2011 Enacted Map is not that different between DI7002 and my illustrative maps. For DI7002, by my calculations it is roughly 6%; for the 21-district illustrative plan that can be constructed from my illustrative modules it is a little under 7%; for the 26-district illustrative plan my calculation it is a little under 8%.<sup>74</sup>

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<sup>74</sup> Similar figures are given in the Defendant Intervenor December 14 Response Brief, with more detail provided in Appendix D of that Response Brief.

Defendant-Intervenors (at p. 26) further object to the fact that, in the process of remedying unconstitutionality, I made major changes in a few districts. But some of the unconstitutional districts required substantial changes (e.g., districts 77 and 80), and those changes had substantial spillover effects in adjacent districts once proper concern was placed on traditional districting principles appropriate for a court-ordered plan.

12E. The Defendant-Intervenors note in their December 14, 2018 Response Brief (at p. 13) that, “on the Reock compactness test, the enacted versions of HD69, HD70, and HD71 are more compact than the proposed districts, and on the Polsby-Popper compactness test, enacted districts HD70 and HD71 are more compact than the proposed districts.”<sup>75</sup> I have discussed compactness issues in my Report. Here I would simply note that, for the state as a whole, all remedial maps proposed to the Court are, to two significant digits, either as good as the 2011 Enacted map with respect to the Reock and the Polsby-Popper measures of compactness, or they are

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<sup>75</sup> But I believe that it is also true that four of the eleven unconstitutional districts in DI7002 are less compact than the corresponding districts in the 2011 Enacted Map on the Reock measure of compactness (districts 69, 71, 74, 90), and three are less compact on the Polsby-Popper measure (69, 70, 90), which means that two of the redrawn unconstitutional districts in DI7002 are also less compact than their counterparts in the 2011 on both measures. But in my December 7, 2018 Report I placed no weight on these particular facts about compactness in evaluating DI7002. Rather, I asserted that all five of the complete remedial maps suggested to the Court in Briefs filed in November 2018 were, in my view, sufficiently compact, since they each were as or more compact than the 2011 Enacted map on average. And I also asserted that I saw no reason to choose among them on compactness grounds, I also noted in my Report that, in this set of five proposed remedial maps, DI7002 was not the most compact, though it was also not the least compact.

(marginally) better (see Table below). Since the 2011 Enacted map has already been unsuccessfully challenged in the Virginia Supreme Court as a violation of the State's compactness requirement specified in the State Constitution, the fact that the compactness level in the 2011 map was sustained against challenge under state law (see *Veselind v. Virginia State Board of Elections*, Virginia Supreme Court, May 31, 2018) made it seem reasonable to me to use its average compactness as a benchmark in assessing the compactness of proposed remedial maps under state law standards. But that is a legal judgement best left to the Court.

100 districts average	Reock	Polsby-Popper
2011 Enacted Map	.36	.24
DI 7002	.36	.25
Special Master 21	.36	.25
Special Master 26	.36	.26

12F. The Defendant-Intervenors call attention in their December 14 Response (footnote 6 at p. 24) to what they regard as an excessive number of VTD splits in some of my illustrative modules. I would again repeat the point made clearly in my Report that the configurations in the modules I present to the Court were meant to

be illustrative, and further changes can be made as required by the Court.<sup>76</sup> As noted above, once the Court has agreed on a basic map, I will ask the legislative staff to examine the possibility of some purely technical changes to reduce still further the VTD splits in that map. That is something which can be done very quickly once the Court has made clear its preferences, and these minor and essentially technical corrections can wait till then.<sup>77</sup> As I noted in my discussion above, VTD splits in my illustrative modules were not for racial purposes but

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<sup>76</sup> I would also reiterate that VTDs are simply units of administrative convenience and can be and readily are changed. While splits in VTDS can be used as one tool among many to effectuate race preponderant districting, that a large and unjustified number of VTD splits has been shown to have been, on balance, racially motivated does not mean that a few VTD splits, even ones involving some of the same VTDs, are necessarily racially motivated. Avoiding all VTD splits is virtually impossible, especially in districts whose lines cross county borders or those of other government units. Some VTDS are irregularly shaped and/or large in population (see discussion of VTDs in Virginia in the text), so splits in VTDs can be driven by reasons such as population balancing, or the desire for minor improvements in the shape of district borders. These are the key factors for VTD splits in my own illustrative map drawing. And, once the basic structure of a final map has been ordered by the Court, legislative staff can undoubtedly find ways to still further reduce VTD splits in that map beyond the extensive reductions in VTD splits I have already provided (see below).

<sup>77</sup> Given the need for a new map to be promptly promulgated, if the conversion matrix between new and old VTD lines at the census block level has already been completed by legislative staff so as to allow for updated reports of the type presented in my December 7 Report to be created for a Court-ordered map, I expect to use the most recent VTD map available to the legislative staff. Otherwise, I will continue to use the 2010 VTDs, since that is one for which full census and archival election data at the census block level is available. However, I have been informed by legislative staff that there may be an administrative problem if new VTD lines are used in 2019 for the House of Delegates election, but older VTD lines are used for all other election contests. On this point I will consult further with legislative staff once a Court ordered map configuration is specified.

involved population balancing and, in some cases, improving compactness because of the somewhat peculiar shapes of some VTDs,<sup>78</sup> or they reflect decisions to avoid changes not ancillary to remedying the constitutional violation by limiting the number of districts changed, thus necessarily perpetuating cross-district VTD splits involving one of the unchanged districts and a changed district.<sup>79</sup>

I would also emphasize the simple fact that, in all my illustrative modules, VTD splits are lower than in the 2011 Enacted map, sometimes much lower.

For comparison purposes regarding VTD splits I will discuss the same two maps based on my illustrative modules that are discussed in the Response of the Princeton Gerrymandering Project. The illustrative modules I prepared contained 39 VTD splits in the 21-district configuration (Illustrative modules Richmond 1A, Petersburg 1A, Peninsula 1 and Norfolk 1C), and 35 VTD splits in the 26-district configuration (Richmond Illustrative Module 1B, Petersburg Illustrative Module 2, Peninsula Illustrative Module 2, and Norfolk Illustrative Module 1A). This compares with 43 VTD splits in the same 21-districts in the 2011 Enacted map and 57 VTD splits in the same 26 districts in the 2011 Enacted map.

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<sup>78</sup> For example, on page 11 of their Response Brief the Defendant-Intervenors point out a “notch” in the northern part of District 74 and claim this a clear sign that I used race as a preponderant motive. This claim is wrong. The notch is a result of an irregularly shaped VTD and the constraints to draw a district in which it was not necessary to pair the incumbent of district 74 with any other incumbent.

<sup>79</sup> See earlier discussion in this Addendum of the reason for some of the VTD splits in district 69 in my illustrative modules, namely the fact that district 68 remained unchanged.

The tables below show VTD split comparisons for my 21-district illustrative map and my 26-district illustrative map, versus the same districts in the 2011 Enacted map, along with data on number of County Splits and numbers of County pieces in those changed districts in each map. As is apparent, both illustrative maps are better than the 2011 Enacted map regarding VTD splits, and as good or better concerning county splits and better in having fewer county pieces.

But I have also included comparison data in these table on DI7002. Here I would observe that my 26-district illustrative map has fewer VTD splits than found in the same 26 districts in DI7002, though the reverse is true for my 21-district illustrative map. But I would emphasize that differences across remedial maps in VTD splits are simply not large. However, that 26-district illustrative map is not just superior to DI701 in limiting VTD splits, it is also superior to DI 7002 with respect to total number of split counties, and to total number of county splits, and with respect to the latter consideration, the differences between it and the HB7002 are more substantial.

<b>21-district Changed Plan</b>			
	<b>Enacted</b>	<b>HB7002</b>	<b>SM21</b>
<b>Total VTD Pieces</b>	43	33	39
<b>County Splits</b>	16	16	15
<b>Total County Pieces</b>	41	38	31

<b>26 District Changed Plan</b>			
	<b>Enacted</b>	<b>HB7002</b>	<b>SM26</b>
<b>Total VTD Pieces</b>	57	39	35
<b>County Splits</b>	22	19	14
<b>Total County Pieces</b>	51	47	33

12G. Defendant-Intervenors object to my rejection of plans that contain “fracked” districts. They assert that the “Court’s injunction is not properly used as an opportunity to impose freewheeling good-government ideas neither endorsed by a political process nor tethered to what was litigated in this case or found by this Court (Defendant-Intervenor December 14 Response Brief, p. 24). Here, my Report is being completely mischaracterized. While I coined the phrase “fracking” to refer to a particular kind of discontinuity in the multiple portions of a county contained within a given district for which there was no standard term in the redistricting literature, the undesirability of this practice is actually well known. For example, in the most recent district court majority opinion in the North Carolina legislative case, *Common Cause v. Rucho* No 1:16-CV-1026 (U.S. District Court, Middle District of North Carolina, 2018, slip op at p. 105 [p. 194]), the North Carolina legislature is quoted as asserting that one of the districting criteria that it implicitly relied upon was that “a district line should not traverse a county line more than once.” Of course, that is simply another way to describe what I have called “fracking”.

And, further, as I said in my December 7, 2018 Report and reiterated above: there are two good reasons to avoid “fracking” in a court-ordered map. First, it gives the appearance of improper manipulation of district boundaries. Second, regardless of the motivation for the “fracking,” it is evidence of sloppy craftsmanship that has no place in a court-ordered map.

12H. The Defendant-Intervenors claimed in their December 14 Response Brief that I have given “practically *no* weight to ‘incumbency considerations’” (emphasis theirs, p. 22), and that I have “done the bare minimum” to avoid pairing incumbents. While I did not introduce incumbency considerations until after I had drawn maps satisfying traditional districting criteria, in the actual illustrative modules I have presented to the Court, I have taken great care to avoid incumbent pairing, even at the cost of some reduction in compactness and some increase in county fragmentation -- within the context, of course, of modules that are being based on traditional districting principles. In fact, to the best of knowledge no present incumbents are paired in any of my modules.

They also assert that I have “failed to preserve the cores of districts” (p. 23). It is simply wrong that no special care was taken to preserve central elements of the unconstitutional districts (see Defendant-Intervenors’ December 14 Response, p. 22). As stated clearly and unequivocally in my Report, in those unconstitutional districts where there was a clearly preponderant county in terms of population (9 of the 11) I took care to assure that this County remained the predominant one in the district. In a tenth unconstitutional district, district 63, where Petersburg was the plurality county, I assured that Petersburg was kept whole in all modules involving changes in the configuration of district 63. As I have reiterated, the drawing of

adjacent districts came about as a consequence of seeking narrowly tailored remedies for the infirmities in the unconstitutional districts.

12I. The Defendant-Intervenors have claimed the Special Master's proposals all have "the uncanny attribute of targeting the very incumbents the legislature would be most inclined to protect. For example, HD66 is the district of Speaker Kirkland Cox, and no proposed version of that district leaves it even mildly unscathed. Similarly, no proposed version of HD76, represented by the House Chairman of Appropriations, Delegate Chris Jones, allows the incumbent to be competitive in the district. And the Special Master's "1-A" version of Norfolk may render Delegate Barry Knight, the most senior member of the Norfolk delegation, uncompetitive in his own district." The only response that I can give to the claim that I have "uncannily" targeted legislative leaders, with its implication that I have done so deliberately, is that this claim is not just wrong but nonsensical. I could not have targeted legislative leaders since neither I nor my research assistant had knowledge of which districts were the ones in which legislative leaders resided. The map drawing software my research assistant used at the University of California, Irvine simply showed home locations by district of incumbent, without names attached. Additionally, the initial shape of districts was done prior to receiving the current incumbent addresses, so the district designs are primarily a product of good government criteria, with emendations provided later to avoid incumbency pairings.

As stated repeatedly in my Report, I have done line drawing that is blind to politics except insofar as I needed political information to ensure that there was not unintentional vote dilution in the unconstitutional districts vis-à-vis the ability of the African-American community to elect candidates of choice. After I had information on incumbent home addresses, all incumbents were treated equally<sup>80</sup>. District configurations in the districts adjacent to the unconstitutional ones emerged from decisions as to how best to remedy the constitutional infirmities in the unconstitutional districts. No incumbent was intentionally favored or disfavored as I sought to create narrowly tailored remedies for the constitutional violations to be proposed as illustrative maps to the Court. As stated clearly in my Report, my map drawing was based on traditional districting criteria, including the preservation of county integrity to the extent feasible, while drawing a narrowly tailored remedy that only changed districts that were adjacent to unconstitutional districts, and that kept the number of changed districts as low as possible given the need to remedy the constitutional violation.

13. The Princeton response directly compares the 2011 Enacted map and two plans that can be created from the Special Master's modules, a 21-district plan

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<sup>80</sup> If Defendant-Intervenors are making the legal claim that the Special Master was required to give special deference to preserving the districting configurations in the districts where incumbents held senior legislative offices, that claim is one best left to the Court.

(Illustrative modules Richmond 1A, Petersburg 1A, Peninsula 1 and Norfolk 1C) and a 26-district plan (Richmond Illustrative Module 1B, Petersburg Illustrative Module 2, Peninsula Illustrative Module 2, and Norfolk Illustrative Module 1A).

13A. This non-partisan and academically-based group concludes that the 26-district plan (Richmond Illustrative Module 1B, Petersburg Illustrative Module 2, Peninsula Illustrative Module 2, and Norfolk Illustrative Module 1A) offers a distribution of minority voting strength “that most closely aligns with the distribution which would be expected in race-neutral redistricting ...” and further state that this combination of illustrative modules “best eliminates the unnatural sorting of voters on the basis of race which is unlikely to have occurred by chance [in the 2001 Enacted map].” They also find that even the 21-district plan based on the Special Master’s illustrative modules is not far from the 26-district plan with respect to the distribution of black voting age population across districts.

13B. Neither the Princeton Gerrymandering Project nor I are asserting that there are no other districting maps whose black voting age distribution might also provide evidence that race was not a preponderant motive in their creation. Rather, the analysis undertaken by the Princeton Gerrymandering Project offers a direct rebuttal to the completely unfounded claim by Defendant-Intervenors in the December 7 Response Brief that the illustrative modules I have drawn are instances of districting done with a race preponderant motive. Instead, the

Princeton Gerrymandering characterizes my illustrative modules as exactly the opposite. Moreover, the illustrative modules I have drawn not only avoid race as a preponderant motive, but they do so in terms of a narrowly tailored remedy with no incumbent pairings.

14. As I review the various Response briefs, I find that the responses to the illustrative maps are not at all consistent. Some Responses (or, at least, parts of these responses) criticize the illustrative modules because the changes they make from the 2011 Enacted map are too extensive (e.g., a claim that the number of voters shifted in the illustrative modules is excessive, and the associated claim that the changed illustrative districts fail to adequately protect the reelection chances of legislative leaders). On the other hand, some responses (or, at least, parts of these responses) also criticize the illustrative modules because the changes they make from the 2011 Enacted map are viewed as not extensive enough (e.g., a claim that the configuration of some unconstitutional districts should have been changed to a greater extent than was done in my illustrative modules, or a claim that the illustrative modules do not go far enough in increasing the ability of the African-American community to influence electoral outcomes in the state in districts other than the ones found to be unconstitutional). On the other hand, the Defendant is willing to accept any the implementation of any of the illustrative modules.

## APPENDIX C

Data Errors in the Plaintiffs' Response to a Court Order Requesting a Summary  
Table of Black Voting Age Data for Submitted Remedial Maps and for the Special  
Master's Illustrative Modules

1. On January 15, 2019 Plaintiffs responded to an earlier Court Order requesting that they provide a summary table of black voting age data for submitted remedial maps and for the Special Master's illustrative modules. The requested data table is appended to their response as Exhibit A.
2. There are errors in the data on black voting age population percentages in Exhibit A for some Norfolk area districts in several maps and in all my illustrative modules of the Norfolk area.
3. There are errors made in characterizing the black voting age populations in my Norfolk area illustrative modules in districts 79 and 89. To the best of my knowledge the black voting age population percentage data reported in the text above for these Norfolk area modules is identical to what is calculated by DLS from the corrected shape file deposited with DLS on December 10 and posted on their website. The only difference between the two shape files (that filed on December 7 and the corrected version filed on December 10) was in the Norfolk area, so the black voting age population DLS percentages reported by Plaintiffs for my illustrative modules in Exhibit A of their January 15, 2019 filing are correct for the Richmond, Petersburg, and Peninsula areas of the state.
4. There are minor mistakes in a Norfolk area district in other maps as well. In the 2011 Enacted Map, Appendix A reports district 79 as having a black voting

age population of 29.70% according to DLS data measurement; however, the correct figure according to DLS data I received directly from legislative staff is 29.46%. In the NAACP map, Appendix A reports district 89 as having a black voting age population of 52.4%; the correct figure according to DLS data I received directly from legislative staff is 52.1%. And there may be an error of similar magnitude in either district 79 or district 89 in Plaintiffs Map A.

5. As best as I can assess, one reason (though possibly not the only reason) for these minor discrepancies is that the data reported by Plaintiffs for Norfolk do not correct a mistake in the *Maptitude* data files for this county. Census Block # 517100009021044 in the Norfolk area has zero population in the *Maptitude* data file but has 19,279 persons in the DLS file. Census block 517100038001000, also in Norfolk, has 19,352 in the *Maptitude* data file but 73 persons in the DLS file. These population discrepancies also affect black population and black voting age population numbers (and percentages) for districts that contain one but not both of these districts. To the best of my knowledge my data reports have the same numbers as DLS because my research assistant, Jonathan Cervas, went to the *Maptitude* data file on his computer and recoded by hand those two census blocks to be consistent with the DLS data.<sup>81</sup> Because the problem is confined to a few census

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<sup>81</sup> As I later learned, this problem with *Maptitude* data for Norfolk had been previously identified by DLS staff.

blocks in Norfolk, the black voting age population DLS percentages reported by Plaintiffs in Appendix A of their January 15, 2019 response to the Court Order appear to me to be correct for the Richmond, Petersburg, and Peninsula areas of the state for the other plans reported in the Exhibit.

6. I have done no analyses of the black voting age population percentages reported in Exhibit A under the rubric of "DOJ." At no time did I make use of this metric. Rather, I took all the data on black voting age percentage reported in the text of this Second Report from information provided me by DLS staff, and to the best of my knowledge that data should be consistent with data as it would be directly calculated by DLS.

CERTIFICATION

I swear that, to the best of my knowledge, the data and figures provided in the Second Report of the Special Master in *Golden Bethune-Hill* dated January 17, 2019 are correct, as are the statements made in that Report.

Bernard Grofman

Signed January 17, 2019

Irvine, California USA